DMS - 4640

CHEMICAL ADMIXTURES FOR CONCRETE

EFFECTIVE DATE: MARCH 2008

4640.1. Description. This Specification establishes requirements and specific test methods for chemical admixtures for concrete. Chemical admixtures for concrete are liquid or powdered materials added during concrete mixing to improve fresh or hardened properties of the concrete.

This Specification includes admixtures for air-entrainment, water reduction, retardation, acceleration, water reduction and retardation, water reduction and acceleration, high-range water reduction, high-range water reduction and retardation, and latex.

4640.2. Units of Measurement. The values given in parentheses (if provided) are not standard and may not be exact mathematical conversions. Use each system of units separately. Combining values from the two systems may result in nonconformance with the standard.

4640.3. Material Producer List. The Materials and Pavements Section of the Construction Division (CST/M&P) maintains the Material Producer List (MPL) of all materials conforming to the requirements of this Specification. Materials appearing on the MPL, entitled "Chemical Admixtures for Concrete," need no further sampling or testing unless deemed necessary by the Project Engineer.

4640.4. Bidders' and Suppliers' Requirements. The Department will purchase or allow on projects only those products listed by manufacturer and product code or designation shown on the MPL.

Use of pre-qualified product does not relieve the Contractor of the responsibility to provide product that meets this Specification. The Department may inspect or test material at any time and reject any material that does not meet the specifications.

4640.5. Pre-Qualification Procedure.

A. Pre-Qualification Request. Submit a request for evaluation under DMS-4640 to the Texas Department of Transportation, CST/M&P, Cement Laboratory (CP51), 125 East 11th Street, Austin, Texas 78701-2483.

For all materials except latex, include the following information:

- name and information of company contact personnel;
- product name;
- chloride content of the product with a statement that no chloride has been added during its manufacture;
- completed ASTM C 494 or ASTM C 260 test report from a Cement and Concrete Reference Laboratory (CCRL)-accredited or certified independent laboratory; and

- specification targets and production tolerances for the following properties:
  - pH,
  - percent solids,
  - specific gravity,
  - color and appearance, and
  - infrared spectrophotometery scan.

For latex, include the following information:

- name and information of company contact personnel;
- product name and polymer description; and
- specification targets and production tolerances for the following properties:
  - viscosity (including test method and temperature reference),
  - percent solids,
  - pH,
  - specific gravity, and
  - styrene/butadiene ratio.

B. Pre-Qualification Sample. Submit a 1-pt. sample with Safety Data Sheets to the Texas Department of Transportation, CST/M&P, Cement Laboratory (CP51), 9500 North Lake Creek Parkway, Austin, Texas 78717.

C. Sampling and Testing. Sampling will be in accordance with Tex-318-D. (See Note in Section 4640.5.D.1)

Testing will be in accordance with ASTM C 260 for air-entraining admixtures; ASTM C 494 for accelerating, retarding, and water-reducing admixtures; and Tex-319-D for latex. (See Note in Sub-Article D.)

Please contact CST/M&P at 512/506-5858 for more information on these test methods.

D. Evaluation. CST/M&P will notify prospective bidders and suppliers after completion of material evaluation.

1. Qualification. CST/M&P will add materials meeting the requirements of this Specification and approved for Department use to the MPL.

NOTE: CST/M&P will award provisional approval at 6 months for admixtures that comply with the alternative compressive strengths in ASTM C 494, Table 1. If subsequent test results at 1 year fail to meet the standard requirement of 100% of reference strength, CST/M&P will withdraw approval of the admixture and notify all of the admixture users immediately.

To maintain approval status, submit semi-annual notarized certifications (in June and December) stating that there has been no chemical alteration of the product since originally submitted for approval.

Once qualified, report any change in formulation or manufacturing process to CST/M&P. Any changes in the material require re-evaluation.

When, in the opinion of the Director of CST/M&P, changes have been made in the composition or manufacturing process of a pre-qualified material, a re-evaluation of the performance may be required.

2. **Failure.** Producers not qualified under this Specification may not furnish materials for Department projects and must show evidence of correction of all deficiencies before reconsideration for qualification.

   The Department normally bears the costs of sampling and testing; however, the supplier will bear the costs associated with materials failing to conform to the requirements of this Specification. The Director of CST/M&P will assess this cost at the time of testing.

   Amounts due the Department will be deducted from monthly or final estimates on Contracts or from partial or final payments on direct purchases by the State.

E. Periodic Evaluation. The Department reserves the right to conduct random sampling of pre-qualified materials for testing and to perform random audits of test reports. Department representatives may sample material from the manufacturing plant, the project site, and the warehouse. CST/M&P reserves the right to test samples to verify compliance with this Specification. In case of variance, the Department's tests will govern.

4640.6. Material Requirements. Air-entraining admixtures must meet the requirements of ASTM C 260.

Latex additives must meet the requirements listed in Table 1.

Table 1

Latex Additive Requirements

Property	Value
Total Solids, Min, %	47
pH	9.0–11.0
Brookfield Viscosity (#1 spindle @ 10rpm), mPa·s, Max	60
Butadiene Content, %	30–40
Freeze-thaw Stability, 2 cycles, Max	0.1

All other concrete chemical admixtures must meet the requirements of ASTM C 494.

4640.7. Archived Versions. Archived versions are available.